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MINOR STREAM RAVINES IN HILLS

Statement of Problems presented by District acceptance of responsibility for construction and maintenance (Supplementing proposed letter to Harold Flannery).

Definition of Minor Streams on the valley floor has been established in the "Recommendation for Financing and Construction of Major and Minor Flood Control Facilities", and a statement of the problems from the valley rim to confluence with a major stream is also set forth therein.

Nearly all minor streams in hilly land will conform to the definition of a "watercourse" in Section I, F. of District Ordinance 59-1, and therefore are eligible to be District Flood Control projects. When requested to accept a stream that is eligible under Ordinance 59-1, the District appears to be obligated to accept such stream for maintenance and construction of whatever works may be required.

In most cases the required works are de-silting dams which perform a triple purpose of preventing local erosion, reducing peak flows a small amount, and reducing maintenance by keeping silt out of downstream works.

Since the hillside ravines are defined channels, it may be decided that financing of construction and maintenance is solely a District responsibility (see cost-sharing proposal for valley floor portion in above named recommendation). The basic problem then becomes the acquisition of R/W for access to, and construction of the needed facilities. Under present arrangements the public body having jurisdiction over development (For the most part San Jose, and to a lesser degree Milpitas) makes a loose requirement that the developer is to conform to District requirements, putting the entire onus on the District staff, of prescribing R/W and obtaining dedication.

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It is recommended that a meeting or meetings be held with the cities concerned (separately) in an effort to set up procedure for submitting maps in hilly areas that will preclude a developer laying out lots to cover an entire parcel, regardless of geology and terrain, and then making a claim that District requirements cause him to "lose" lots. Such procedure will need to include preplanning of potential developable hilly areas over large parcels of 500 acres or more. Lot and street layout will need to conform to land contour and flood control R/W requirements, and minimum size of lots needs to be increased considerably.

To initiate a proposed development, the developer should be required to submit a blank map, showing only boundaries of the parcel concerned. The city planning staff would then lay out master-planned streets (usually main cross-parcel access streets only) and, with the cooperation of the District staff, flood control R/W requirements. The map would then be returned to the developer, together with lot size information, and he could fit lots of proper size into the remaining land.

An additional requirement should be that needed dams are constructed during development of the tract in order to take advantage of unrestricted construction access and the availability of fill material for dams. If the boundary of a parcel under development traverses the center of a ravine (as is often the case) the developer should be required to obtain across-ravine R/W in order to permit dam construction entirely within District-owned property.

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RECOMMENDATION FOR FINANCING AND CONSTRUCTION OF MAJOR AND MINOR FLOOD CONTROL FACILITIES

With Special Reference to Tributary Streams in the East Zone of the Santa Clara County Flood Control and Water Conservation District

The normal configuration of watersheds in the Santa Clara Valley consists of headwaters in the mountains with all or nearly all of the minor tributaries joining the major stream before the latter emerges onto the valley floor. The major stream then draws away from the hills as it courses to an outfall in San Francisco Bay. Except for certain marshy conditions that prevail near the bay, these major streams have a visible, fairly large natural channel all the way across the valley. Such a condition makes definition of a facility as to whether it is flood control or local drainage fairly simple.

In the East Zone an entirely different picture is presented. The Coyote River and its major tributaries; Silver Creek, Penitencia Creek and Berryessa Creek, all flow in a general northerly direction not away from the hills but parallel to them. Such a watershed configuration presents many technical problems not only in hydrological studies, but often also in determination of the alignment of tributaries which are often plowed into farm land during the summer. Some tributaries have inadvertently been covered with development without ample provision for runoff; an outstanding example is the development of the Woodhaven Subdivision on the watercourse of Babb Creek. As a result it was found necessary to divert South Babb into Silver Creek near Markingdon Avenue, and to place North Babb Creek underground through the Woodhaven Tract.

The lack of clearly defined natural channels running across the floor of the East Zone to a major tributary of Coyote River, or Coyote River itself, has led to difficulty in trying to determine the nature of the financing that should be applied to such a facility. We are confronted with the fact that as the water rushes down out of the hills and remains in a channel, the present definition of a flood control facility would apply. However, when the channel across the valley floor is not clearly defined, or practically non-existent, and the facility to be installed would normally be considered a drainage facility, it is readily seen that the drainage facility must be built large enough to contain the flood waters coming from the hills. It then becomes apparent that the definitions for flood control facilities must be reviewed and corrected in order to assure a more equitable means of financing the particular type of facility that must be installed in a large number of instances throughout the East Zone.

A long and careful study of the financing problems of the East Zone tributaries in the Santa Clara Valley north of Coyote has been made by the planning section of the District staff with the following results:

1. All minor tributary streams that rise in the foothills of the Mount Hamilton Range cross developed or developable lands before arriving at a confluence with the Coyote River or a major tributary thereof;

2. The hilly lands that embrace the watershed headwaters are either undevelopable, or at best, only partially developable with very low density residential subdivisions;

3. Because of the steep terrain, and location in belts of relatively higher mean annual rainfall, the hilly lands contribute a disproportionately greater share of the runoff per unit area [over that contributed by lands on the valley floor] in any given tributary watershed;

4. The hilly lands therefore contribute a large share of the runoff, but potential revenue from these lands in the form of drainage fees is either small or non-existant;

5. When valley floor lands are developed, the design of drainage systems therein must provide for runoff that originates in the hills and crosses through on the way to the major stream; therefore,

The drainage systems described in (5) are obviously more costly than a system which drains only valley lands, yet there is little or no potential revenue from the upper watershed as noted in (4), which leads to considerable inequity if the developers of valley floor lands are required to finance the complete system.

The District planning staff feels that the following is an equitable and logical solution to the complex problems posed above and makes these recommendations: [particular emphasis is placed on East Zone problems, which may be used as an example for other Zones wherein the same or similar problems may exist].

A. That there be two divisions of flood control facilities, major flood control facilities and minor flood control facilities, to be determined in accordance with the following general criteria:

   1. Major flood control facilities would consist of the primary outfall of a watershed [such as Coyote River, Guadalupe River, San Tomas, Calabazas, Stevens, Permanente, Adobe, Barron, Matadero, Uvas and Llagas Creeks] and all major tributaries thereto. These should be determined on the basis of appearance of the existing channel. That is, the channel should appear to be natural rather than man made, and should

have a natural connection to the primary outfall or major tributary.

2. Minor flood control facilities would consist of minor streams which have a large enough hillside water shed area and runoff therefrom to require the facility across the valley floor to be constructed in accordance with major flood control facility design criteria, but in other respects would not meet the remaining requirements for major flood control facilities. A common distinguishing feature of many minor flood control facilities would be the lack of a clearly defined natural connection to a major flood control facility. This may be caused either by plowing over, or an abrupt change in grade when the water comes out of the hills which has a tendency to cause the waters to spread and the channel to disappear.

B. That all major and minor flood control facilities be designated by name.

1. As a need or request for improvement of a stream or water course arises, the District planning staff would review the problem and make a recommendation to the Board which would in turn pass a resolution designating the nature of the facility, i.e. whether it be a major flood control facility, a minor flood control facility, or a drainage facility. In some instances the headwaters of the stream are on relatively flat ground; this may be the natural state of the facility, or may have been caused by diversion of the upstream portion of the facility. In such cases it would be necessary to designate the reaches of the facility which are defined as major or minor.

2. In the East Zone the following would be considered as major flood control facilities: The Coyote River, Calera Creek, Los Coches Creek, Berryessa Creek, Lower Penitencia Creek from the confluence with the Coyote up to the railroad tracks near Main Street in Milpitas, Upper Penitencia Creek, Silver Creek, Thompson Creek, Babb Creek below White Road, Yerba Buena Creek and Miguelita Creek. The same would probably be true of North Babb and South Babb, and there may be other streams in the East Zone which have not previously been considered which, upon study, would be designated as major flood control facilities.

C. Design criteria

1. Major flood control facilities should be designed for a 100 year flood. The 100 year flood is an accepted criteria for giving adequate flood control protection

to urban areas. It is used by the State Division of Highways whose facilities would cross over many of the flood control facilities on the valley floor. Conformity to the accepted criteria of the 100 year flood would eliminate a number of obstacles in coordinating projects with other public agencies.

2. Minor flood control facilities

    a. Where the grade is sufficiently steep the facility could be designed for a 10 year flood installed in a pipe, with use of the roadways as overflow structures for the temporary excess of water that could not be handled in the pipe during the peak runoff from floods in excess of 10 year frequency.

    b. When the grade flattens to a point where the roadways would be over loaded or the pipe is more expensive than an open channel, then an open channel should be constructed on the design criteria of a major flood control facility.

    c. The public body having local jurisdiction should require street layout which would provide a reasonably direct route for laying the underground pipe described above, and a continuous downgrade in the street profile would be necessary from the intake to outfall of the pipe. If every effort is not made to keep pipes out of side and/or back lot easements, the District would not recommend designation of the stream as a minor flood control facility.

    d. Special gutter overflow structures would be required which would permit the street to become an auxiliary channel when the floods of greater than 10 year frequency occur. These would be constructed at intake and outfall of the pipes designed to a 10 year criteria, and would be designed for a 100 year flood less the pipe capacity.

    e. Where design flows require a facility which would be less expensive if built in open channel [usually when the design flows exceed the capacity of a 60 inch pipe] a developer of lands traversed by the facility would have the option of placing additional reaches underground by paying the excess in cost over that of the open channel. In certain cases the design criteria could be adapted to the specific problem rather than be brought under a generalization of the 100 year flood.

f. Engineering would be either by the District or by the developer's engineer in consultation with the District. No financial contribution would be made by the District on projects constructed without the approval of the District Engineer.

D. Financing

1. Major flood control facilities would be financed by established procedure [District pays all cost except for certain bridges, culverts and realignments made to favor local development, with right of way costs minimized as much as possible by dedications].

2. Cost of minor flood control facilities would be jointly shared by the District and the public body having local jurisdiction over land development. The cost share of the public body would be all pipe costs up to and including a 36 inch pipe, plus $250.00 per acre for all land which is on the valley floor and all land that develops in the hilly area within the watershed of the facility. Right of way costs would be minimized as much as possible by dedications obtained by the public body having local jurisdiction.

3. Since District funds are often limited, and this is particularly true in the East Zone, the local public body should be prepared to devise some means to advance the cost of facilities made necessary by development within its jurisdictional boundaries. As District funds become available the local public body would be reimbursed for the construction cost of the project less the cost of any pipe up to and including 36 inches inside diameter and also less $250.00 per acre for all valley floor lands within the watershed and any development in the hills existant at the time of reimbursement.

The above recommendations may well apply to such streams as South Rodeo Creek in the North Central Zone, Lone Hill Creek in the Central Zone, the remainder of the Coyote Basin south of the town of Coyote, as well as the entire perimeter of the south valley in the South Zone. Further study should be given to these problems to determine whether they conform with the above program [which has been recommended primarily upon the basis of problems studied in the East Zone].